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*Animation* 2011 6: 127
DOI: 10.1177/1746847711406374

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>> Version of Record - Jul 21, 2011

What is This?
Magic Lantern, Dark Precursor of Animation

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Abstract
This article works through a contrast between the magic lantern and movie projector, focusing on Meiji Japan (1868–1912) as a pivotal site in order to address the relation between cinema and animation, historically and ontologically. Using Simondon’s notion of technical objects to transform Foucault’s notion of dispositif into a theory of technical paradigms, the author finds that the difference between cinema and animation is not primarily one of materials but of qualities of movement. An exploration of the projection-image (utsushie) of the magic lantern suggests that cinema and animation share a technical paradigm, linked to electromagnetism, one that is shadowed by Cartesian technism. Modifying Deleuze’s emphasis on any-instant-whatever and on time as the virtual of the cinematic movement-image, this study finds that cinema and animation share a dark precursor, any-matter-whatever. Because animation stays close to any-matter-whatever, it offers a direct experience of life-in-matter, and anticipates the any-medium-whatever of the digital.

Keywords
animation, apparatus, Cartesian geometry, early cinema, electromagnetism, magic lantern, Meiji Japan, paradigm, technical object, utsushie

The increased significance of digital media and the surge in popularity of animation throughout the 1990s contributed not only to reviving and expanding the study of animation, but also to bringing new critical attention to bear on the question of the relationship between cinema and animation. The relationship of cinema and animation has always been a difficult problematic. It potentially brings into play so many different registers for analysis, from resources, materials, media, formats, and technologies, to modes of production, distribution, address, exhibition, and reception. In this article, building on a contrast between the magic lantern and the movie projector, with Meiji Japan (1868–1912) as a pivotal site, I wish to address the very large and general question of the relationship between cinema and animation, but with reference to a specific historical moment, in the hope of bringing both new insights and material limits to the ways in which we tend to characterize or conceptualize animation vis-à-vis cinema.

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If I open my account with the emergence of digital media and the surge of animation production in the 1990s, it is not only because I think these events still define the contemporary situation, but also because they encouraged a bold new thesis about the relationship between animation and cinema, namely that animation, long subordinated to or subsumed by cinema, is now subsuming cinema. While it was Lev Manovich’s (2001) analyses of digital and new media that seemed to provide the definitive statement about animation subsuming cinema, the notion that, in the late 20th century, animation was coming out from under the yoke of cinema and becoming the cultural and mediatic dominant, resonated with broader currents and conceptualizations in film and media. Japanese director and theorist Oshii Mamoru (2004) also proclaimed ‘All cinema is becoming animation’, and animation theorist Alan Cholodenko (2007) has argued, in a deconstructive vein, that animation is not supplementary to cinema but is its condition of possibility: cinema is always already animation.

Such conceptualizations address the contemporary sense of a profound transformation both in cinema and in animation, opening new sites for the study of animation. While this account of the magic lantern works in the clearing generated by such conceptualizations, my concern here is not with establishing the importance of animation or animation studies by reference to its ubiquity or centrality in the context of cinema or digital media. Simply put, I do not take animation as the paradigm for understanding moving images in general, nor am I interested in subsuming cinema within animation. Rather I see the study of animation affording a different paradigm, and maybe even different paradigms, for understanding moving images in relation to historical contexts and conditions.

As implied by my use of the term ‘paradigm’ together with an emphasis on ‘technical objects’ such as the magic lantern and movie projector, my focus will be less on cultural reception or cultural uses of technologies and more on what I will call ‘technical paradigms’. While the emphasis on the cultural uses of technologies provides an important corrective to theories of technological determinism and sometimes serves to highlight social unevenness, it tends to begin with received subject–object distinctions, thus reinforcing and even reifying them. For instance, if one begins with the Japanese use of the magic lantern, one posits Japan in advance as the subject, relegating the technical object to the status of inert and passive object. In contrast, I borrow the term ‘technical object’ from Gilbert Simondon (1958), a philosopher of science who wished to explore the specific modes of existence of technological devices or apparatuses without positing a substantalist or metaphysical distinction between technical objects (mechanism) and natural objects (organism). Simondon’s approach directs our attention less to the mechanics and the mechanical structure of the apparatus and more to the underlying diagram of potentialities of the technical object – analogous to what Guattari (1995) calls a ‘machine’ in contrast to a mechanism, apparatus, or structure.

As for the term paradigm, I use it in a manner analogous to what Foucault called a positivity or dispositif, commonly translated in English as ‘apparatus’, which resonates with Thomas Kuhn’s notion of paradigm (Agamben, 2009: 11–16). In sum, in my approach to the magic lantern and animation, I am interested in technical paradigms that in effect come prior to, orientate, and allow for cultural and historical transformations, but which in turn may undergo transformation or mutation.

Now, in the context of cinema and animation, the technical paradigm that first comes to mind is that of the mechanical succession of instants that comes of producing a strip of film with a series of distinct images (or photograms), which is run through the movie projector to generate a moving image. Gilles Deleuze (1986: 4) provides a nice gloss for this technical paradigm, styling it ‘any-instant-whatever’. The movie projector then is the technical object, and the underlying
A diagram or technical paradigm entails the generation of any-instants-whatever. This is one point of departure for thinking the relation between cinema and animation, one that makes it possible to think about the relationship between cinema and animation both in terms of convergence and divergence, because one can consider how animation techniques harness the potentiality implicit in the technical paradigm of any-instant-whatever in a manner distinct from cinema. It is then possible to explore divergent series of animation rather than settling for a monolithic identity for animation as opposed to a monolithic cinema, and what is more, it is possible to see how such ‘animetic’ series may become entwined with cinematic series in various ways.

Nonetheless, even though the technical paradigm of any-instant-whatever associated with the movie projector affords an excellent point of departure for rethinking the relation of cinema and animation, it is also true that another technical object, the magic lantern, played an important role in the formation of animation ‘technics’, especially in Japan. (I use terms such as ‘technics’ and ‘technicity’ to avoid positing a divide between techniques and technologies.) In its turn to the magic lantern, this article has three goals. First, it aims to look at the magic lantern not merely in terms of a mechanical structure but in terms of a technical paradigm. Needless to say, it will be necessary to look at it somewhat mechanistically or structurally in order to parse its paradigm. Second, in attending to the relationship between the magic lantern and movie projector at the level of technical paradigms, I aim to explore how these paradigms come together or move apart. Third, insofar as such paradigms are not simply confined to or locked inside the technical object, they also provide a way of thinking about different trajectories of modernity or modernisms, not merely between nations but both across nations and within a single national context, in this case, that of late 19th- and early 20th-century Japan. It is with these three goals in mind that I turn to the magic lantern, which in Japanese is rendered either with reference to the technical object as gentō (illusion-lantern or phantasm-lantern), or with reference to its images as utshūie, which I translate here as ‘projection-image’.

The projection-image

In his book on cinema and magic lanterns in Japan, film historian Iwamoto Kenji raises the example of Tejima Seiichi who returned to Japan in 1874 after studying in the United States. Tejima brought with him a magic lantern and a collection of slides. According to reports, the collection includes 17 slides dealing with astronomy, 12 on natural phenomena, 20 with explanatory diagrams of the human body, and 21 on animals. Although it is not clear where the shows were held (eventually the materials ended up at a theatre museum at Waseda University), a number of magic-lantern shows using these slides were held in the following years, under the rubric Eiga tenrenkai, ‘Projection-Image Exhibition’ (Iwamoto, 2002: 12).

The use of the term eiga to refer to the magic lanterns and magic-lantern slides may seem surprising. Years later, in the wake of movements that emerged in the late 1910s proposing to reform motion pictures in Japan, collectively called the Pure Film Movement (junsui eigaeki undo), the term eiga became the standard term for cinema in Japan (Bernardi, 2001; Gerow, 2010; Lamarre, 2005). Previously, however, in the days of early cinema (roughly 1895–1906) in Japan, there was no consensus on the terminology for cinema, and thus there was an incessant coinage of terms. Often, however, films shown with a movie projector were called katsudō shashin or ‘moving pictures’ (or some other variation on ‘moving’ and ‘image’ was used). In contrast, as the example of Tejima’s exhibition attests, the contemporary term for cinema, eiga, was often used in the context of magic-lantern shows. And the term eiga was sometimes used for the images painted on glass slides for the lantern (Iwamoto, 2002: 13). In light of these two uses of eiga in the context of magic
lanterns, it seems appropriate to think of these shows in terms of a ‘projection-image’. The term projection-image is also a good gloss for the term *utsushie*, which is as frequently used as *gentô* (illusion or phantasm lantern) to refer to the magic lantern.

Iwamoto raises this example of the *Eiga tenrenkai* because it marks two transformations that are central to his study. First, although the magic lantern had been used in a range of venues in Japan for about two centuries, Iwamoto calls attention to a profound shift in the contents and display practices associated with magic lanterns in the late 19th century, in the Meiji era. After the Meiji revolution in 1868, with the subsequent calls for modernization under the banner of *bunmeikaika* or ‘enlightenment and civilization’ that encouraged government-sponsored study-abroad missions to learn Western sciences (as in the case of Tejima Seiichi), the magic lantern also entered into the scientific and didactic spirit of things. As Iwamoto remarks in the context of Tejima’s slides of the human body, their images of skeletons no longer conjured up an ‘emissary from the world of the dead’ (as they frequently had prior to the Meiji period), but rather presented scientific and clinical ‘specimens’ (Iwamoto, 2002: 13). In sum, a pronounced shift occurred in magic-lantern shows: from the phantasmagoria (or *misemono* attraction) to the didactic, scientific, and clinical, with a corresponding shift in venue, from theatrical venues to assembly halls and a new sort of public sphere.

This shift in magic-lantern shows highlighted in Iwamoto’s study recalls the subtle distinction between ‘monstration’ and ‘attraction’ in the context of the early cinema. Tom Gunning’s (1990) notion of the cinema of attractions stresses the unique power of cinema to make images seen, to show or exhibit things: it ‘directly solicits spectator attention, inciting visual curiosity, and supplying pleasure through an exciting spectacle’ (p. 58). André Gaudreault (2006: 97–98) glosses the notion of attraction with that of monstration, which, as Wanda Strauven (2006: 117) suggests, brings with it greater emphasis on how ‘the filmic (or the apparatical) is monstrated to the spectator’ rather than on how ‘the spectator is attracted toward the filmic (or the apparatical)’ (emphasis in the original). Such a distinction makes sense in the context of moving pictures and magic-lantern shows in late 19th- and early 20th-century Japan, where the explications of ‘lecturer’ (*katsuben* or *benshi*) were at least as great an attraction for the audience as the images. Both magic-lantern shows and moving pictures oscillated between these two different yet inseparable ways of displaying their visibility, attraction and monstration, which serve as a reminder of the constant overlap and interplay of entertainment and pedagogy in this context. The new scientifically orientated monstrations associated with the magic lantern did not replace the attractions of *misemono*-type entertainments. The two modes continued side by side.

Second, Iwamoto reminds us that, although Edison’s kinetoscope made its debut in Japan in 1896, and the Lumière’s cinematographe in 1897 (High, 1984), it was really not until the 1910s that moving pictures gained widespread popularity. Because electricity was not widely available, and because there were relatively few films, moving pictures did not immediately displace magic-lantern shows. Indeed Iwamoto suggests that it was not until after 1923 that the magic lantern became dissociated from moving pictures and more closely associated with theatre and vaudeville performances. In other words, in the time of early cinema and even into the era of silent film in Japan, the magic lantern and the movie projector remained side by side, situated vis-à-vis one another, not definitively separable into distinct domains of performance, address, or exhibition.

Now, I have teased these two particular points out of Iwamoto’s study because they present two moments where teleological histories of the moving image are suspended, in abeyance – that of technological progress in which the movie camera and movie projector are seen to drive cinematic advances, and that of the progressive emergence of narrative cinema, or what is commonly dubbed classical film form (or style) or institutional cinema.
In the first kind of teleological history for cinema, the apparatus of the moving-image projector is seen to present an inevitable improvement upon the magic lantern, and was thus destined to replace it. The magic lantern is then construed as an antiquated precursor of the movie projector, or even as a ‘primitive’ or non-cinematic apparatus, an optical toy. Consequently, in the context of Meiji Japan, the persistence of the magic lantern and its capacity to ‘substitute’ for the movie projector halts the flow of technological progress at the level of the apparatus, and undermines the sense of necessity for and inevitability of the movie projector.

Second, I have called attention to something analogous to attraction and monstration in the context of the magic lantern. Attraction and monstration, as proposed by Gunning and Gaudreault, are calculated to resist the idea that ‘early cinema’ or ‘primitive cinema’ (1895–1906) naturally and inevitably prepared the way for, and culminated in, the institutional cinema or classical cinema that emerged between 1915 and 1930, and that came to dominate not only film production but also film history. Gaudreault (2006: 86–88), for instance, reminds us that the very term ‘early cinema’ implies that it is an early form that was destined to become classical or institutional narrative cinema between 1915 and 1930 (see also Gaudreault and Gunning, 2006). The emphasis on attraction and monstration in the context of magic lanterns in Meiji Japan thus arrests the teleological history of the emergence of narrative cinema as the destiny, natural outcome, or culmination of cinematic progress. Indeed, Iwamoto’s study of the magic lantern and cinema has a similar aim: styled as a history of visual culture and a prehistory of cinema, it situates Japanese cinema within a broader field of visual culture in which the teleological conceits that have contributed to developmental histories of cinema of film lose their purchase.

There is a third notion that commonly serves to join these two teleological conceits, and that is the apparatus theory centered on the monocular lens. Noël Burch (1990: 162), for instance, takes issue with Marcelin Pleynet, Jean-Louis Baudry and others [who] decreed that the optical properties of the photographic lens (and hence the cinematic lens), a monocular technology arising directly from bourgeois ideology, were a kind of ‘original’ sin of the seventh art, a historical fatality adhering to its very being and that only disruptive practices could free it from.

While I fundamentally share Burch’s resistance to technological determinism, I also think it important to point out that apparatus theory was directed against an underlying technical paradigm rather than the apparatus alone, which also allowed for a theorization of the ways in which economic determinations shored up this paradigm (Comolli, 1985). The technical paradigm in question was, needless to say, associated with one-point perspective and thus with Cartesianism. And as Martin Jay (1988) reminds us, Cartesianism is not simply a structurally determined outcome of the use of one-point perspective. Rather it is the combination of one-point perspective with ‘Cartesian ideas of subjective rationality in philosophy’ that served to make Cartesianism appear to be ‘the dominant, and even totally hegemonic, visual model of the modern era’ (p. 4).

In other words, the resistance to the teleological film history within early film studies, manifested as resistance to apparatus theory and classical film form, continues in the lineage of resistance to Cartesianism – but not to one-point perspective as such, nor to universal reason tout court. It implies resistance to a specific manner of spatializing time in which historical time is divided into periods, with periods taking on such a degree of autonomy that it becomes difficult to articulate relations across them without resorting to grand metaphysical conceits of historical progress, or resorting to equally grand metaphysical cultural unities (the West, the East, or the nation), in order to impose continuity across periods in a transcendent manner. This manner of thinking...
history is a variation on Cartesianism insofar as history and historical materiality are relegated to extension in space, and time only becomes imaginable in the form of a causality that comes to this spatialized time from the outside. The resistance in film studies to the teleological conceits implicit in apparatus theory and classical film form is at heart resistance to a specific way of articulating causality that relies on the separation of space (extensity) and time (intensity) derived from Cartesianism, as well as a separation of matter and soul (or memory). This is why such resistance not only takes issue with teleological causality applied to the history of classical film form, but also rejects causality within classical film form. Miriam Hansen’s (1999: 63) description of Bordwell’s take on classical film form articulates the causality within classical film form clearly: ‘thorough motivation and coherence of causality, space, and time; clarity and redundancy in guiding the viewer’s mental operations; formal patterns of repetition and variation, rhyming, balance, and symmetry; and overall compositional unity and closure’.

To counter this Cartesian space/time paradigm of causality in the context of cinema, Hansen (1987) not only proposes a new paradigm (vernacular modernism) but also turns to Walter Benjamin and articulations of Messianic time, in which time (effectively spatialized through modernization) does not come to space from the exterior in the form of (efficient) causality. Instead time ‘returns’ within and upon the image at those moments and sites where its spatialization comes into crisis, where it is caught overreaching. Such a conceptualization of time can also bring into play Bergson, Nietzsche, Proust, and Deleuze (see Brooks, 1995, for instance). Gunning and Gaudreault do not directly address the problematic of Messianic time, but it is clear that their resistance to claims for the naturalness of narrative cinema similarly presents a profound challenge to historical periodization and efficient causality. Their notions of attraction and monstration suggest a different paradigm for imagining space/time relations both within films and within film history.

In sum, in Iwamoto Kenji’s account of the magic lantern in Meiji Japan, there are signs of a two-fold suspension of the temporality and causality associated with the ‘progressivist’ history of cinematic development, at the levels of exhibition practices (attraction and monstration) and of technical objects (lantern vis-à-vis projector). Recent tendencies within studies of early and ‘silent’ film encourage us to understand this suspension in terms of something like an experience of Messianic time and modernism, which serve to disrupt Cartesian temporal causality and modernization. While I find myself drawn to a similar threshold, my impulse is to think in terms of more than two paradigms, to avoid transforming distinctions that were designed to move beyond binary oppositions into a binary opposition. Thus I wish to turn to the magic lantern as a technical object in the Simondonian sense, which will return us to the question of animation, without opting for a generalized Messianic experience of time in advance.

**Nishikie and Utsushie**

Iwamoto Kenji (2002: 6–16) opens his account of the magic lantern by exploring its preference for skeletal apparitions, which he connects to late Edo wood-block prints (nishikie or ukiyoe). He includes a print showing a magic-lantern show in which the images of battling skeleton-specters recall the skeletons in the prints of Utagawa Kuniyoshi (1797–1861). The Kuniyoshi print shows the warrior Mitsukuni confronting a terrible apparition conjured by a sorceress to frighten him (Figure 1), while the print of the magic-lantern show depicts an audience reacting to projected images of battling skeletons (Figure 2). In other words, the magic lantern is like a sorceress conjuring up the spirits of the dead, to regale and terrify spectators. In this respect, as Iwamoto indicates, the magic lantern in Japan bears some resemblance to the European phantasmagoria, which in turn had an important impact on the trick films of Méliès. It is not a stretch, then, to think of the...
Figure 1. A nightmare by Kuniyoshi of Mitsukuni defying the spectre conjured by Princess Takiyasha (1845–1846).
Figure 2. An image showing utsushie entertainment from the late Edo period.
magic-lantern show and early cinema in Japan in terms of attraction and monstration. In fact, the general Japanese term for spectacles, *misemono* or ‘shown things’, might well be rendered as ‘attraction’, exactly as Gunning (1990: 56), drawing on Fernand Léger, glosses it: making images seen. The attraction of the magic lantern lies in its power of showing as such. And the attraction was not only to the image but equally frequently to the magic lantern itself, to the apparatus or device. Indeed, in Japan as elsewhere, magic lanterns were often highly ornate affairs, spectacles in their own right, and often merited explication or monstration. Such monstration was consonant with a general interest in the operations and effects of the magic lantern, or ‘apparatical attraction.’

Yet, if we look closer at the magic lantern as a technical object, it appears to constitute an application or even instantiation of the principles of optical geometry associated with Cartesianism. It consists of a box or chamber in which illumination from a light source is brought to a focus (often with a concave mirror) in order to project the light through an image (traditionally an image painted onto glass), and then through an aperture in the chamber and a convex lens (see Figure 4 in the projection-image and movement-image section of this article). This assemblage of elements serves to project the image in a magnified luminous form onto some kind of surface, usually a screen. Such use of lens and mirrors to refract and focus rays of light formed the basis for the Cartesian model of the human eye and perception, which presents a purely spatialized and mechanized understanding of perception, not to mention an efficient causality in which the image ‘out there’ is brought into (inverted) focus in the eye. In addition, David Hockney (2001) has boldly claimed that the realism and accuracy of Renaissance art, previously attributed to skill in the use of one-point perspective, was impossible to achieve by just using the human eye and was in fact achieved through the use of lens and mirrors.

Now, the same ‘Cartesian technism’ (for lack of a better term) is at work in the mirrors and lens of the magic lantern: ‘As an optical instrument, it embodies the intersection of mathematical, physical and technical “sciences”’ (Vermeir, 2005: 128). And yet, in Iwamoto’s example of magic-lantern shows of dueling apparitions in the late Edo period, both the form of expression (*nishikie*) and the spectator experience (supernatural and attraction) seem at odds with the usual modes of rationality that are commonly associated with Cartesianism – scientific accuracy, instrumentalism, subjective mastery, optical ordering of the world with geometries, efficient causality, and the underlying dualism of mechanism and spirit, of the immanent and transcendent. The mechanism seems somehow to generate spirits, to entail a moment of localized and materially induced transcendence as it were. Thus both the wood-block print (*nishikie*) and the projection-image (*utsushie*) merit closer attention in relation to Cartesian technism.

In the context of *nishikie* or *ukiyo-e*, the received wisdom is that their compositional techniques present a profound contrast with the European Renaissance techniques associated with geometric perspective, especially one-point perspective. In recent years, the theory of superflat proposed by artist Murakami Takashi transformed this contrast into full-blown opposition: one-point perspective became construed as the bearer of Western modernization, while the superflat of Edo art, not only *nishikie* but also Rimpa school and other Edo arts – characterized by the use of layers and suppression of hierarchy between them – presented an opposition to Western modernization that anticipated Japanese postmodernity (Azuma, 2000; Murakami, 2000). Yet, as Thomas Looser (2006) and other commentators have pointed out, the basic principles of one-point perspective were not only well known in Edo Japan but were also frequently employed in *ukiyo-e*. A prime example is the fourth scene in Katsushika Hokusai’s *Thirty-Six Views of Mount Fuji* that affords a view down the river Furugawa and through the pillars of the Mannen Bridge toward Mount Fuji (Figure 3). The view down the river is executed in accordance with one-point perspective, yet the focal point directs our eyes below the horizon into the river. In addition, Mount Fuji is not centered...
Figure 3. A view under the Mannen Bridge at Furukawa from Katsushika Hokusai’s Thirty-Six Views of Mount Fuji (1830–1833).
in the composition. As a consequence, the image potentially offers three different focal points of attention: its center, the mountain, and that of one-point perspective.

The result is a sort of multi-perspectivalism. In conjunction with the use of layers to suppress a hierarchical ordering of depth, such multi-perspectivalism invites a restless eccentric movement of the eye (Tsuji, 2004), which shows some affinity with the folie du voir evoked in the context of the Baroque (Buci-Glucksmann, 2002). Similar techniques come into play in Yoshikuni’s nishikie of the skeletal apparition evoked in Iwamoto’s study: strong orthogonal lines direct the eye in one direction, and maybe even two, while the apparition generates another focus, and the depth from which the skeleton emerges is not pushed into the background but is as salient as the stage in the foreground. And so, a new question arises: what happens to the multi-perspectivalism of such nishikie images when the magic lantern transforms them into utsushie?

To begin to answer such a question, some points and caveats need to be drawn from this account. First, while I have followed Iwamoto in highlighting the relation between nishikie and utsushie, we should recall that the magic lantern was and still is used to project a variety of images. The landmark study of Kobayashi Genjirō (1987) includes illustrations of slides and magic-lantern techniques, providing a good sense of the range of imagery deployed, from caricatures and printed figures to black-plate color-etched landscapes. There is also a website on utsushie attributed to Kusahara Machiko (1999–2009) that not only presents contemporary magic-lantern shows done by the Minwaza, a contemporary troupe, but also offers a range of historical materials on utsushie and the magic lantern. The projected images range from nishikie and cartoon sketches to tinted photographs. In addition, Yamamoto Keiichi’s (1988) study of Edo shadow plays, in linking them to utsushie, not only expands the way in which one thinks about the projection-image but also evokes the dynamics of what is today commonly called silhouette animation. The focus on nishikie in this context provides a strategic account of imagery not a comprehensive one.

Second, the restlessness of the eyes evident in the nishikie use of one-point perspective serves as a reminder that images should not be construed as static in opposition to movement. Rather, as Deleuze is fond of pointing out, the image as such is movement. Movement is not supplementary to the image. This point is crucial in understanding animation and cinema, because the common bias is to see movement coming to the image entirely from the exterior. Such a bias tends to introduce a strong divide or even rupture between the moving image and all other images, which encourages a teleological conceit, however unwittingly. Instead, one might say that, in the case of moving images, movement comes to the image from the outside. Simply put, the movement ‘added’ to images locates the movement already inside them – what Foucault (1987) calls the outside of the inside, and Deleuze styles as shock to thought, a shocking of the body into thinking (Massumi, 2002).

Third, optical devices associated with Cartesian technism were widespread in Japan from the 18th century (Screech, 2002), and as we have seen, one-point perspective was not uncommon in ukiyo. Thus the question of the cultural uses of technology cannot be avoided. And it is a question that returns with greater urgency in the context of the movie camera and projector. Should we see the transformation of one kind of Cartesian technism (one-point perspectivalism) into multi-perspectivalism within nishikie as a result of cultural uses or cultural difference, that is, with an emphasis on the reception of technics? The answer is decidedly ‘yes’. The cultural reception and transformation of technologies and technics are always in evidence. But then, without endorsing a strong ontology of technology in which technical objects take on a teleological essence and determinism, I wish to focus on the technical object to counter a tendency within studies of cultural uses of technology to reduce the technical object to a black box, for such a move often amounts to little more than substituting cultural determinism for technological determinism, and typically cultural
nationalism for universal modernization. In contrast, I wish to open the technical object, to consider what might be dubbed its ‘weak ontology’, its ‘underdetermination’ or passive determination (Deleuze, 1994: 74; Dumouchel, 1995; Lamarre, 2009: 33).

Building on these three qualifications, let me return to the transformation of nishiki into utsubo or projection-images. Initially, one might think that, given how the array of mirrors and lenses in the magic lantern focuses light on the image in order to project it, images drawn in one-point perspective might be ideally suited to the device. Yet the effect of the second lens (or aperture) is to spread the rays of light outward. Subsequent to focalization, there is radiation. Such a radial effect is, in fact, an inversion of one-point perspective not unlike that which Hubert Damisch (1994) observes in certain religious paintings: illumination appears to radiate toward the viewer from the vanishing point, as from the halo of a saint. In the instance of the magic lantern, even though the light radiates from the device, the experience of the image is frequently that of it emerging and looming toward the spectator, and the darkness of the room enhances such an effect. This is surely one reason why magic-lantern shows proved so fond of specters and apparitions. The projection-image seems to be coming both from the technical object and from out of thin air, as if the device somehow materialized the image. In other words, although there is arguably a Cartesian technism at work in its assemblage, the magic lantern discovers a new potentiality of that technism, one that is different both from the multi-perspectivalism of nishiki and from that other famous mutation of one-point perspective: anamorphosis.

A brief look at anamorphosis will help explain what is happening with the magic lantern. The frequently cited example of the use of anamorphosis is Hans Holbein’s painting, The Ambassadors, in which the anamorphic limitations implicit in the use of one-point perspective (the fish-bowl effect that would appear around the foreground if one-point perspective were strictly applied) are placed right in the center of the image. What appears to be a blur or stain on the painting, when viewed laterally proves to be a skull. Death at the heart of worldly prosperity, material limits at the heart of Cartesian technism. Hans Holbein’s use of anamorphosis thus discovers the ‘impotentiality’ at the heart of one-point perspective. Instead of lingering on, celebrating, and promoting the potentiality of this technism, Holbein displays its impotentiality. (On impotentiality, see Agamben, 1999, ch. 11.) In other words, the emergence of something new, a new potentiality of image, does not happen simply by finding a new potentiality within a certain technical paradigm. Rather it happens through the discovery of an impotentiality that is ontologically prior (a weak ontology as it were). This impotentiality is what I call, building on Deleuze (1994: 119), a ‘dark precursor’.

In using Cartesian technism to project luminous images, the magic lantern, however inadvertently, discovers its impotentiality in a different manner. Instead of signaling how it fatally reduces the world to inert spatial extensity as Holbein does, the magic lantern finds the ghost in the mechanism, or the spirit of the material body, which no longer has to come to matter from without, in the manner of a God who creates, saying, ‘Let there be light.’ The magic lantern spurs the discovery (or rediscovery) that, in the matter of this world, there are already gods, deities, souls, and all manner of numinous, luminous spirits. With the inversion of focalization into radiant projection, the dark precursor of techno-scientific modernity turns out to be light itself, electromagnetism. Yet light is not just out there, external. It is outside, communicating as the inside of the outside, that is, finding itself in matter. The magic lantern discovers not merely the amazing potentiality of light (as energy) but also its impotentiality (as matter): light not only as an abstract wave but also as a concrete particle. As such, the projection-image is met not only with delight but also with trepidation, hence the thrill and shock of it.
In fact, if we return to Iwamoto’s account of skeletal apparitions, it is telling that, in his account of the Meiji-era shift within magic-lantern shows toward scientific and educational demonstration, he evokes a new technism that is exemplified in diagrams of the workings of the human body, mentioning X-rays. Iwamoto’s account thus encourages us to think of the new technical paradigm emerging around the magic lantern not merely in terms of showing and appearing but also in terms of exposure. The projection-image is not just making images seen but also making images seen through. The magic lantern discovers a new potentiality of the image, its power of apparition and emergence, through an inversion of one-point perspective that unlocks the impotentiality of Cartesian technism, that is, its incapacity to address the relation between spirit and matter, time and space, transcendence and immanence. The magic lantern finds a new technical paradigm, electromagnetic technism. Yet the very potentiality of the new paradigm is accompanied by its dark precursor: the ‘dark’ material qualities of light that allow it to pass through and affect bodies, which means that every attraction is also an exposure. Gunning (1989: 31–32) captures something of this exposure in pointing out that cinema spectators experience a mixture of credulity and incredulity. The inherent disturbance of the image is related to the new ontological exposure of the world that comes with the projection-image.

As for the potential for multi-perspectivalism found in the nishikie, it is not transferred directly into the utsushie. It cannot simply be shown. It finds itself exposed. Similarly, ghosts and spirits are now exposed, subject to a modern oscillation between credulity and incredulity, a source of shock that is desirable precisely for its unsettling qualities, uncanny as it were. If we compare the depiction of a magic-lantern show of dueling skeletons (Figure 2) with the skeletal apparition in Yoshikuni’s print (Figure 1), it is evident that the skeletal apparition is, in a sense, cut off from the apparatus of nishikie, from its mise-en-oeuvre, its layers, its orthogonal lines, its multiple viewpoints. It is as if one viewing position within the nishikie had to be extracted in order to achieve the radiant inversion of Cartesian perspective. The apparition is now a reality apart from the multi-perspectival technism of Edo nishikie. There will be magic-lantern shows in Japan that use a number of magic lanterns within a single show in a manner that seems to recreate such a multi-perspectivalism (Kobayashi, 1987: 85–86). Yet such practices serve primarily as a reminder that the world of Edo nishikie has been lost, in the sense of being exposed and ‘de-created’, even as it is shown and recreated.

Projection-image and movement-image

The transformation of the magic lantern into the movie projector is commonly presented in terms of the addition of a potentiality to the magic lantern, namely, movement. In fact, there were other technical factors that contributed to the transformation, among them the intensification of the light source through the use of electricity, and the enhancement of lens resolution through techniques of grinding. Yet it is the introduction of automated, that is, electrically generated movement into the magic lantern that commonly appears as the crucial development that makes moving images what they are. Instead of glass plates or slides, a strip of celluloid film (with a succession of images) is streamed past the focalized light source, projecting images in motion onto the screen.

In many histories of the moving image, this transformation takes on the mantle of teleology: the emergence of the movie projector is taken as natural and inevitable – a sign not of mere technical transformation or shift in technical paradigm, but a sign of technological progress. For purposes of illustration, let me draw an example from a book on animation written in 1920 by EG Lutz. Lutz begins his account of animated cartoons with a discussion of the transformation of the magic lantern into the motion-picture projector, calling attention to the technical changes in this basic apparatus that allow for the genesis of moving images.
In the magic-lantern and its improved form, the stereopticon, separate views of different subjects are shown in succession. Each picture is allowed to remain on the screen long enough to be readily beheld and appreciated. But the picture is at rest and does not move. With the motion-picture projector a series of slightly varying pictures of the same subject are projected in quick succession. This succession is at such a rapid rate that the interval of time during which one picture moves out of place to make way for the next is so short that it is nearly imperceptible. In consequence, the slightly varying pictures blend on the screen and we have a phantasmagoria of movement. (p. 4)

In other words, for Lutz, the difference between the magic lantern and the motion-picture projector lies not in the assemblage of light source (illuminant), mirror (reflector), lenses (condenser and objective), and aperture within the chamber, but in the introduction of technologies that allow for a quick succession of images between the focalized light and the objective (the combination of lenses that throws the image onto the screen) – the long ribbon of transparent celluloid containing the sequence of pictures. His comparative diagrams of the two apparatuses highlight their similarity at the level of technical assemblage (Figure 4). It is as if the motion-picture projector were a magic lantern to which movement had been added, in the form of a moving strip of celluloid.

Figure 4. A diagram comparing the magic lantern and the movie projector from EG Lutz’s Animated Cartoons (1920).
As Lutz’s account attests, the sense of improvement and thus teleological progress comes from a certain way of looking at technical transformation, in terms of the realization of a higher potential by adding a new technical potentiality to a prior one. The potentiality of movement is added to the projection capacity of the magic lantern; the result is not just moving images but moving projection-images. It is Lutz’s tendency to look at technical objects in terms of ‘progress through the combination of potentialities’ that contributes to the historical bias toward teleological progress.

So engrained is this historical bias that the persistence of the magic lantern in Japan tends to be explained in terms of temporal lag or backwardness, or, if one wishes to avoid such a developmental paradigm, in terms of the cultural atavism of Japanese spectators. In other words, the magic lantern is not explained but explained away: developmental measures of modernization or national cultures step in to explain everything. How then to speak of the transformation of a technical object without such a bias?

On the one hand, we must acknowledge that the history of moving images entails universalizing processes through which a technical object such as the movie projector is genuinely universalized. This is why the lack of electricity and films in Meiji Japan evokes a sense of temporal lag: the movie projector was actually universalized, even as resources such as electricity and celluloid were unevenly distributed. On the other hand, we need to acknowledge lateral developments, non-cumulative temporalities, non-synchronous synchronicities, and counter-histories, whose importance lies in their display of the resistance that is at once presupposed by and posed to universalization, even as we must be careful not to reclaim the nation or national culture (Japaneseness) as the locus of resistance.

The key to speaking of technical transformation without losing sight of these two aspects is actually simple, although the implications are complex. We do not need to reject the notion that the new technology genuinely entails a new potentiality added to a prior one. One merely needs to take seriously the idea that the addition or invention of a new potentiality never happens without some ‘discovery’ of the impotentiality at the core of the prior potentiality. At the heart of transformation, mutation, or innovation is impotentiality, the dark precursor. Exploring the dark precursor requires opening the black box of the technical object, and at the same time, looking at it in terms of a technical paradigm (or ‘machine’) rather than a structure.

When one opens the magic lantern, the fixity of its elements is striking. Because projection depends on focal length, the distances between illuminant, mirror, images, lens, and aperture cannot easily be changed. The other descendant of the magic lantern, the slide projector, introduced an adjustable focusing lens. But with the magic lantern, if the image is not in focus on the screen, you have to move the lantern forward or backward. The components do not move, are not adjustable once the most efficient positions are determined. This is one of the reasons why the magic lantern becomes associated with stasis, especially in contrast to the moving strip of celluloid film in the movie projector, turning and whirring. This is also why it is possible to speak of the magic lantern in terms of a Cartesian technism: the components are fixed in their optimal position in accordance with focal lengths. Consequently, one might be tempted to take this fixity or static array as the impotentiality of the magic lantern. In fact, however, this array of fixed elements constitutes its potentiality. It allows projection to happen. Its impotentiality lies elsewhere.

Working with the notion that the image as such is movement and thus rejecting an a priori opposition between movement and stasis, I previously characterized the projection-image’s quality of movement in terms of looming, showing, appearing, and exposing or seeing through. In other words, just as the utsushie presents a different quality of movement from the nishikie, so the utsushie presents a different quality of movement from the moving image (ugokie) of the movie projector. It is at this level that the dark precursor occurs, between projection-image and
Figure 5. A drawing for an utsushie slide (tane-ita) by Futaba Tadao (Idiyō) featuring movements for the character of the beautiful Terute-hime from the story of Terute-hime and Oguihian (Tamagawa bunraku).
movement-image, in the encounter between different qualities of movement where they are not resolutely separable or discernible in advance. They are entangled. This is also where technical paradigms begin to separate out.

To anticipate my subsequent argument, in the case of the transformation of magic lantern into the movie projector, the result is not simply one new technical paradigm – a unique and solitary moving image. The result is two intertwined yet ‘agonistic’ paradigms of the moving image that we commonly think of as animation and cinema (on agonism, see Foucault, 1982: 222). But because we are looking at this process historically (that is, backward), the difference between the qualities of movement associated with magic lantern and movie projector is the point of departure. Let’s look then at what happens when movement is added to projection-images, first without the movie projector.

While the projecting components of the lantern are fixed, there were slides, sometimes called panorama slides, where a vast landscape is painted upon a long strip of glass, and the strip was slid past a square opening cut in a wooden frame. Thus the landscape unfurled in projection, rather like a picture scroll unrolling before the eyes, but appearing in segments in accordance with the speed at which someone pulled the slide past the light. There were other slides, sometimes dubbed ‘mecha’ slides, that is, mechanical slides, that were rigged with strings or levers that allowed the projected image to rotate, or for the limbs of a tree or of a human character to move, to wave back and forth, or jerk up and down (Kobayashi, 1987: 11, 106, 175). There were yet other slides that showed some event in a sequential manner, frequently using a single figure (or two figures) drawn in a series of poses intended to recompose an action. In Figure 5, for instance, the slide shows a woman in a series of beautiful poses, turning, looking, reaching, weeping, and speaking, in a manner that seems at once to present a visual list of the most beautiful poses and to invite monstration or even narration.

If such a sequence gives the impression of anticipating animation, it is due to the isolation of a figure and the potential for serial presentation of movement. Stylistically, the figure may feel distant from animation: classical animation as it developed in Japan in the 1920s and 1930s owed a great deal to the plastic line of cartooning associated above all with Disney animation (Ôtsuka, 2008), and this figure evokes the style of wood-block prints. There are many other examples of such sequence slides, some drawn with a style of caricature and simplification (reminiscent of the range of styles found in Tokyo Puck at the turn of the century) that feels even closer to the cartoon styles that subsequently dominated animation. But, above and beyond drawing styles, it is movement that characterizes animation. In fact, the later prevalence of the plastic line or cartoon style in animation can be seen as a way to deal with the dynamics of the moving image: such lines allow a way of negotiating the encounter between hand-drawn images and the moving image in a manner that produces a new kind of attraction, a ‘plasticophilia’ that delights in the bending and rebounding of forms – what Sergei Eisenstein (1988[1941]: 21) dubbed ‘plasmaticity’.

As for quality of movement, the magic lantern slide was pulled slowly or quickly by hand past the focalized light, allowing for a variable temporality, maybe punctuated with commentary: the time of gesture and speech. As such, when we consider the difference in quality of movement between the magic lantern slide sequence and animation or cinema, it is above all the mechanical succession of instants that seems to matter. The movie projector presents an automated or mechanical succession of instants, or what Deleuze calls ‘any-instant-whatever’ in his books on cinema. But it is important not to mobilize this contrast as a total rupture between cinema and other arts, positing an opposition between movement versus stasis, or mechanized movement versus natural movement, or non-human versus human. It is a contrast. A contrast does not lend itself to a history of dialectical overcoming. It is a history of moments or instants where impotentiality complicates
or disrupts apparently seamlessly coordinated movement, which movement has been coordinated technically, aesthetically, and geopolitically. A precursor appears, darkly.

For Deleuze then, the capacity of cinema to generate any-instant-whatever entails two levels of contrast. On the one hand, there is a contrast ‘inside’ cinema, so to speak. It is a contrast between ‘whatever’ in the sense of inducing a mechanistic indifference to a true experience of time and ‘whatever’ in the sense of allowing an instant to be truly experienced as such (durée). Ultimately, Deleuze is interested in the capacity of cinema to arrive at a true or direct experience of time, despite (and because of) the very danger that the mechanistic succession of instants poses to durée. This experience happens in three phases. First, the mechanistic succession of instants becomes diversified into a number of types of movement-image – in the first instance, there are perception-images, affection-images, action-images, and relation-images. Second, these movement-images are historically coordinated into the movement-image. Third, the movement-image falters, stutters, and stumbles, for historical and ontological reasons, and begins to feel pain, disorientation, and thus its relation to the world. This is the time-image, the direct experience of time, as an experience of the impotentiality-in-potentiality that shocks the cinematic sensory-motor schema or body into thought. Such an experience is not a stopping of the image but a stopping on the image, as Paola Marrati (2003: 123) so admirably puts it.

On the other hand, there is a contrast between the cinema and other arts of the image. It is a contrast with the ‘outside’ of cinema, so to speak. It is this contrast that might encourage the sense of a total rupture. When Deleuze (1986: 4) introduces the notion of any-instant-whatever, for instance, he distinguishes the modern from the pre-modern in a way that might be mistaken for a notion of total rupture: ‘The modern scientific revolution has consisted in relating movement not to privileged instants, but to any-instant-whatever … Everywhere the mechanical succession of instants replaced the dialectical order of poses.’ Ultimately, however, the modern scientific revolution does not present a unitary and unifying rupture in Deleuze’s account. Deleuze evokes Kepler, Galileo, Descartes, Newton, and Leibniz as different ways of bringing any-instant-whatever to the fore. Modernity is one and multiple.

It is this gesture that has encouraged me to think of what Deleuze calls the movement-image in terms of a technical paradigm, one of many modern technical paradigms. Deleuze does not pay much attention to the outside relation between cinema and other arts, but it is precisely here that I find the ‘outside of the inside’ of the moving image. And, focusing on technical objects and technical paradigms, I have proposed that the projection-image is the ‘outside of the inside’ of the movement-image. Stopping on the image is the moment where the remnant of the projection-image (its dark precursor) disrupts the movement-image to generate the time-image, just as the dark precursor of lighting rends the sky prior to the flash of lightening. But let me return to the magic lantern to show how this happens concretely.

We have already two kinds of movement with the projection-image. We have first seen that the magic lantern entails showing and exposing any type of image, making it seen and making it seen through. It is a matter of having the focalized light pass through the image, which lets the image appear to hover between emerging, materializing, looming, and to retreating, dispersing, and vanishing. The term ‘spectralizing’ is a good gloss for these qualities. As a consequence, the projection-image is largely indifferent to drawing styles, form, and even medium, provided the image is spectralized onto a transparent surface (traditionally onto glass to prevent melting or burning under the heat of the focalized light source). In an uncanny anticipation of the digital, this spectralizing has the potential to project any kind of image. This is why the magic lantern could accommodate such a range of image forms and media – photography, caricature, landscape painting, and glass, paper, and celluloid. There are no longer privileged forms and materials: the magic lantern relates
showing or exposing to *any-matter-whatever* (at once *any-medium-whatever* and *any-materiality-whatever*). In this respect, it is indeed the precursor of the digitalization, which constitutes an intensification of the exposure of *any-matter-whatever* that begins with the projection-image.

Second, when slides are moved past the focalized light, the temporality of such movement is not that of *any-instant-whatever*, as with the movie projector. Specifically, in a manner that anticipates the animation stand with its layers of celluloid and camera fixed upon a rostrum, the movement here is entirely lateral (Lamarre, 2009: 12–25). Images slide vertically and horizontally. But there is no zooming in and out, no movement into depth. Apparently, in Europe, there were mechanically elaborate magic-lantern shows in which the entire lantern was rolled toward and away from the screen to produce an effect of figures becoming larger or smaller (Barber, 1989; Castle, 1988) but, if such cumbersome operations never became part of the regular coordination of projection-images, it was because the image tends to go in and out of focus rather than transform in size, looming and materializing, dematerializing and vanishing.

In other words, as movement is first added to the projection-image, the limits of the underlying Cartesian technism are felt anew. Spectralization, with its radiant inversion, imparts a sense of overcoming the dualism of matter and spirit, and body and soul, by means of a spiritualization of matter, but, when movement is added to the spectralized projection-image, it becomes painfully evident that the resultant specters inhabit a plane of existence. Because movement along the third axis of Cartesian coordinate geometry is severely limited, we might crudely speaking call this 2D, two-dimensionality. But the experience is not merely that of a missing dimension, a lack of volume and density, of an exterior limit. Rather the experience is that of an internal limit, which we can call transcendental or virtual. This internal limit is the dark precursor where a new technical paradigm (or paradigms) may emerge. Indeed, this is where cinema and animation part ways. Or, in Deleuzian terms, we might say that they actualize the virtual in different ways, transforming the virtual dark precursor in the process.

Deleuze’s (1986: 5) account of time as the virtual of cinema is persuasive: *any-instant-whatever* is the remnant that stops on the movement-image, stuttering and stumbling in the time-image into a direct experience of time. Yet he has trouble situating animation, and it largely drops out of his books, after he mentions it:

Any other system which reproduces movement through an order of exposures [*poses*] projected in such a way that they pass into one another, or are ‘transformed’, is foreign to the cinema. This is clear when one attempts to define the cartoon film; if it belongs fully to the cinema, this is because the drawing no longer constitutes a pose or a completed figure, but the description of a figure which is always in the process of being formed or dissolving through the movement of lines and points taken at *any-instant-whatevers* of their course. The cartoon film is related not to a Euclidean geometry, but to a Cartesian geometry. It does not give us a figure described in a unique moment, but the continuity of the movement which describes the figure.

Deleuze makes a point analogous to the one that I have made here: with the movie projector and the mechanical succession of instants (any-instants-whatever), the continuity of movement now takes priority over the arts of hand (drawing or describing figures), and technism of those arts (such as the multi-perspectivalism of *nishikie*) is foreign to animation and must be transformed. But if Deleuze tends subsequently to eliminate animation from his discussion, it is probably because cartoon film’s transformation of space-time only goes as far as Cartesian geometry in his assessment, whereas cinematic movement takes him beyond Leibniz into Bergsonian *durée*. Yet, as I have shown in the context of the magic lantern as the precursor of cinema and animation, the
technical paradigm is not limited to Cartesianism. It has already discovered its dark precursor. Although there is an underlying Cartesian technism at work in the projection-image, the magic lantern inverts it into a new technism of electromagnetism and spectralization, and then with the initial addition of movement, encounters its internal limits in a new way. But what is at stake here is not any-instant-whatever, but any-matter-whatever.

Written before the VCR, Deleuze’s cinema books focus on cinema primarily from the 1920s through the 1970s. Today, however, as we look at the history of cinema from the perspective both of early cinema and the digital, we have to modify how we think the moving image, historically and ontologically. Following and modifying Deleuze, we can see how cinema presents a transformation of any-matter-whatever into a problematic of any-instant-whatever. Animation, however, sticks closer to the problematic of any-matter-whatever. This is why the difference between cinema and animation is not merely one of materials, say, of photographs versus drawings or models, or even photographs of reality versus photographs of art. The dynamics of the *utsushie* suggest that cinema and animation share a technical paradigm, linked to electromagnetism, which is at the same time shadowed by Cartesian technism. Cinema and animation thus share a dark precursor, any-matter-whatever. In effect, in his account of cinema, Deleuze traces electromagnetism into any-instant-whatever, with time as the virtual of the cinematic movement-image. He traces light as wave. This account of the magic lantern, returning to the dark precursor of animation and cinema, suggests a different path for animation. Animation, in effect, sticks to light as particle, tracing the virtual of the animetic movement-image. But such traces do not lead toward a direct experience of time-in-matter. They lead toward a direct experience of life-in-matter – what I call anywhere the ‘soulful body’ in contrast to the Deleuzian time-image (Lamarre, 2009: 201).

Animation is often characterized in terms of an illusion of life, thus echoing the characterization of cinema as an illusion of reality. But there are no illusions here: images are actually something, movement as such, not a fantasy pure and simple. Consequently, just as cinema affords an actual experience of the reality of time, so animation affords an actual experience of the reality of life. In fact, the tendency to ignore animation or to subsume it within cinema is also a move to subsume the politics of life within the politics of time. Nonetheless, when we hear today that animation is subsuming cinema, we might ask, ‘Is the politics of life really replacing the politics of time, or have these two not always been two faces of the same coin, just as cinema and animation are of the moving image, or the wave and the particle of light?’ As such, the pressing question is not animation subsuming cinema, but that of the projection-image and spectralization as the dark precursor of digitalization. This exploration of the magic lantern as the dark precursor of animation is intended to help pave the way toward a renewed politics of any-matter-whatever, of the soulful bodies of animated life as such, in the context of the technical paradigm of digitalization.

References


